



# ACEC COVID-19 BUSINESS IMPACT SURVEY - WAVE 3

April 2, 2020



# TABLE OF CONTENTS

- Executive Summary
- Demographics
- Economic Sentiment
- Workstyle Impacts
- Business Impacts
- Creditor Assistance
- Impact of Federal Stimulus Plan
- Methodology
- Statistical Notes
- Appendix

# INTRODUCTION

# METHODOLOGY – WAVE 1

- The Institute for Association and Nonprofit Research (IFANR) invited individuals from among the database list of member companies provided by the American Council of Engineering Companies (ACEC) to participate in this survey. One invitation was sent per member company.
  - Data collection occurred on March 17 and 18, 2020.
  - A total of 3,456 invitations were emailed, although 294 bounced and 17 opted-out, resulting in a total of 3,145 potential respondents.
  - Individuals who did not respond to the first email were sent one follow-up reminder.
  - In all, 794 individuals responded to the email invitations for an overall **response rate of 25%**.
- Individuals could respond using a laptop/desktop computer, tablet or smartphone; 12% of respondents completed the survey using a mobile device.
- Throughout the report for Wave 1 meaningful, statistically significant differences are noted by geographic region.

# METHODOLOGY – WAVE 2

- The Institute for Association and Nonprofit Research (IFANR) invited individuals from among the database list of member companies provided by the American Council of Engineering Companies (ACEC) to participate in this survey. One invitation was sent per member company.
  - Data collection occurred on March 24 and 25, 2020.
  - A total of 3,438 invitations were emailed, although 298 bounced and 20 opted-out, resulting in a total of 3,120 potential respondents.
  - Individuals who did not respond to the first email were sent one follow-up reminder.
  - In all, 738 individuals responded to the email invitations for an overall **response rate of 24%**.
- Individuals could respond using a laptop/desktop computer, tablet or smartphone; 11% of respondents completed the survey using a mobile device.
- Throughout this report meaningful, statistically significant differences are noted by number of FTEs.

# METHODOLOGY – WAVE 3

- The Institute for Association and Nonprofit Research (IFANR) invited individuals from among the database list of member companies provided by the American Council of Engineering Companies (ACEC) to participate in this survey. One invitation was sent per member company.
  - Data collection occurred on March 31 and April 1, 2020.
  - A total of 3,417 invitations were emailed, although 298 bounced and 9 opted-out, resulting in a total of 3,110 potential respondents.
  - Individuals who did not respond to the first email were sent one follow-up reminder.
  - In all, 610 individuals responded to the email invitations for an overall **response rate of 20%**.
- Individuals could respond using a laptop/desktop computer, tablet or smartphone; 10% of respondents completed the survey using a mobile device.
- Throughout this report meaningful, statistically significant differences are noted by number of FTEs.

# STATISTICAL NOTES

- Statistically significant differences are evaluated at a 95% confidence interval (for a description of tests used, please see the Appendix).
- There is no margin of sampling error as this was a census of all individuals in the ACEC database.
- Although every effort was taken to minimize survey bias, there is no way to completely eliminate all sources of potential bias. Sources of potential bias include, but are not limited to, the following:
  - Non-response bias
  - Confounding bias
  - Question wording bias
  - Question order bias
  - Habituation
  - Sponsor bias
  - Confirmation bias

# EXECUTIVE SUMMARY



## DEMOGRAPHICS

- The geographic location of respondents' organizations are statistically similar Waves 1, 2 and 3.
- Although there are proportionately fewer firms with less than 11 FTEs (25%) in Wave 3 compared to Waves 1 and 2 (31% and 30%), roughly half of all respondents (49% vs. 53%) still indicate there are 25 or fewer full-time equivalents at their organization.
  - The median number of FTEs in Wave 3 is 26.5 compared to 23 for the previous two waves. The difference between the waves is not large enough to affect the overall results to questions in this report, so comparison between Waves can still be made accurately.
  - The largest organization in Wave 1 reported 11,000 FTEs compared to 10,000 in Waves 2 and 3.

## ECONOMIC SENTIMENT

- More than nine out of ten firms feel the economy at all levels is worse today than it was 30 days ago. In addition, more than half feel their firm's finances (54%) and cash flow (58%) are worse today.
  - Firms with 25 or fewer FTEs are slightly more likely than other firms to say their cash flow is worse today (64%).
- More than eight out of ten firms feel the economy at all levels will be even worse 30 days from now. In addition, sentiment about the firm's finances (68%) and cash flow (72%) deteriorate even further compared to the already poor sentiment today.
- Although nearly half of firms feel the economy will improve six months from now, about one out of four think it will continue to get worse. Sentiment about firms' finances and cash flow follow the same trend.

## WORKSTYLE IMPACTS

- Although the percentage of firms that have changed their leave policy is stable, the shift towards providing emergency paid leave (now at 34%) instead of unpaid leave continues to increase likely due to passage of the stimulus plan last week.
  - A new response option was included in Wave 3 as a result of open-ended comments in the previous Waves. As a result, we find **25% of firms are allowing their employees to borrow from future leave or go negative on their leave balance.**
  - The larger the firm size, the more likely the firm has implemented emergency paid leave and/or is allowing employees to borrow future leave / go negative on their leave balance. Firms with at least 201 FTEs are also more likely to have changed all leave policies.
- Compared to Wave 2, more firms have implemented each method of working with clients to ensure work continuation. Allowing virtual work and social distancing (both 90% up from 84%) still top the list.
  - Generally speaking, the larger the firm size, the more likely the firm has implemented all methods.

## BUSINESS IMPACTS

- While many firms have already taken actions in the past 30 days to shore up their finances, even more expect to do so in the coming 30 days. Principal among these actions are implementing hiring freezes (29% have done and 34% expect to) and freezing non-essential purchases (29% and 42%).
  - Not only are all sized firms more likely to take various actions in the coming 30 days compared to the past 30 days, but larger firms are generally more likely to have taken, and likely to take, actions than smaller firms.
- Similar to Wave 1 and 2, Very few organizations (6%) report problems with public clients due to protective measures conflicting with contract terms.
- Consistent with Wave 1 and 2, there continues to be an increase in the percentage of firms (45% up from 40% in Wave 2 and 24% in Wave 1) reporting delays in RFPs/RFQs or Awards due to COVID-19.
  - As firm size increases, so too does the percentage of firms reporting delays, up to 51 or more FTEs where it levels off.
- Consistent with Wave 1 and 2, there continues to be an increase in the percentage of firms (70% up from 58% in Wave 2 and 44% in Wave 1) reporting project delays or cancellations due to COVID-19.
  - As firm size increases, so too does the percentage of firms reporting delays/cancellations.

## CREDITOR ASSISTANCE

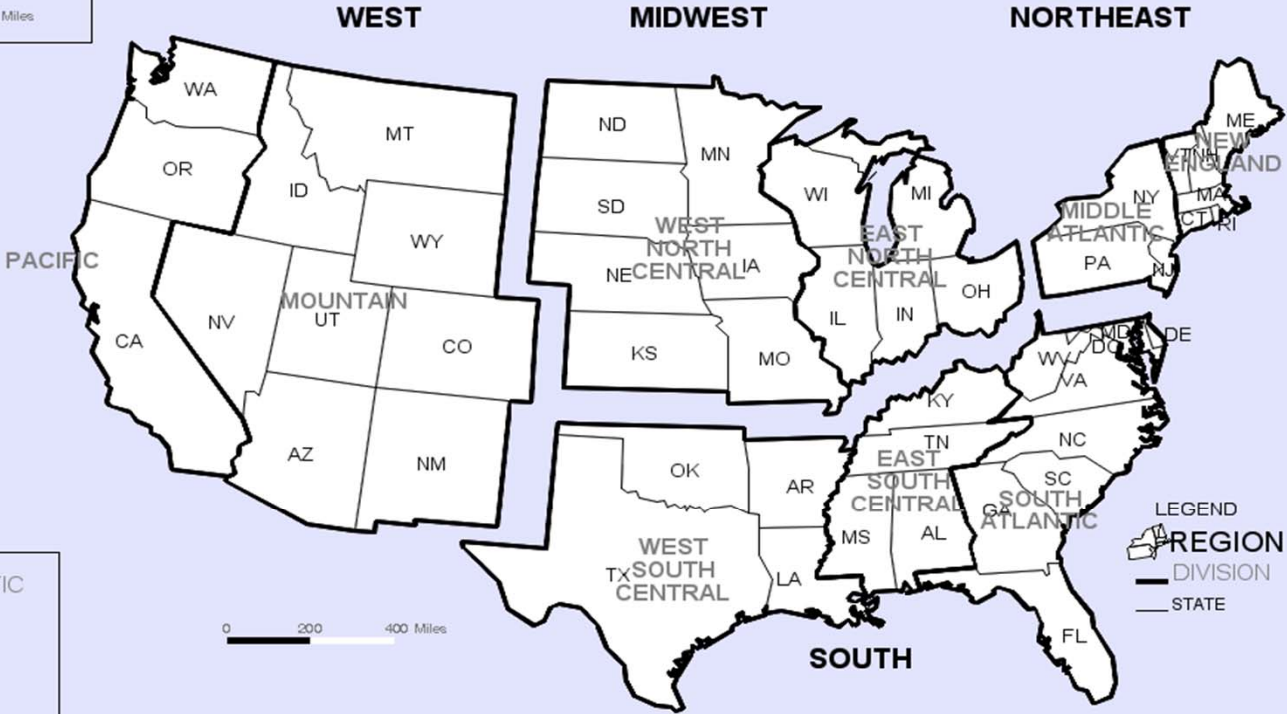
- Compared to Wave 2, more firms are reporting assistance from their creditors in all areas. Nonetheless, a majority of firms still report they have not received or don't need assistance (72% down from 87%). The most common is offering new credit lines / loans (12% up from 6%).
  - Firms with 201+ FTEs are more likely to report receiving assistance of any kind. In particular, firms with between 201 and 500 FTEs are much more likely to report receiving assistance regarding increasing amounts of existing credit lines and offers of new credit lines.

## IMPACT OF FEDERAL STIMULUS PLAN

- While just more than half of firms (51%) indicate the federal stimulus package passed last week will have a positive impact on their firm, nearly one-third (32%) are not sure yet. Only 3% feel it will have a negative impact.
- As firm size increases, so too does the percentage feeling the stimulus package will have a positive impact, with the exception of firms with 501+ FTEs. They are more likely to feel no impact.
  - Firms with more than 500 FTEs are *less likely* to say the stimulus package will have a positive impact (40%) and *more likely* to say it will have no impact (45%), probably due to the focus of the package being on small businesses.
  - Smaller firms, especially those with 25 or fewer FTEs, are *more likely* to say they are not sure (40% for firms with 25 or fewer FTEs) of the impact, likely due to their needing assistance understanding the details of the package.

# DEMOGRAPHICS

# Census Regions and Divisions of the United States



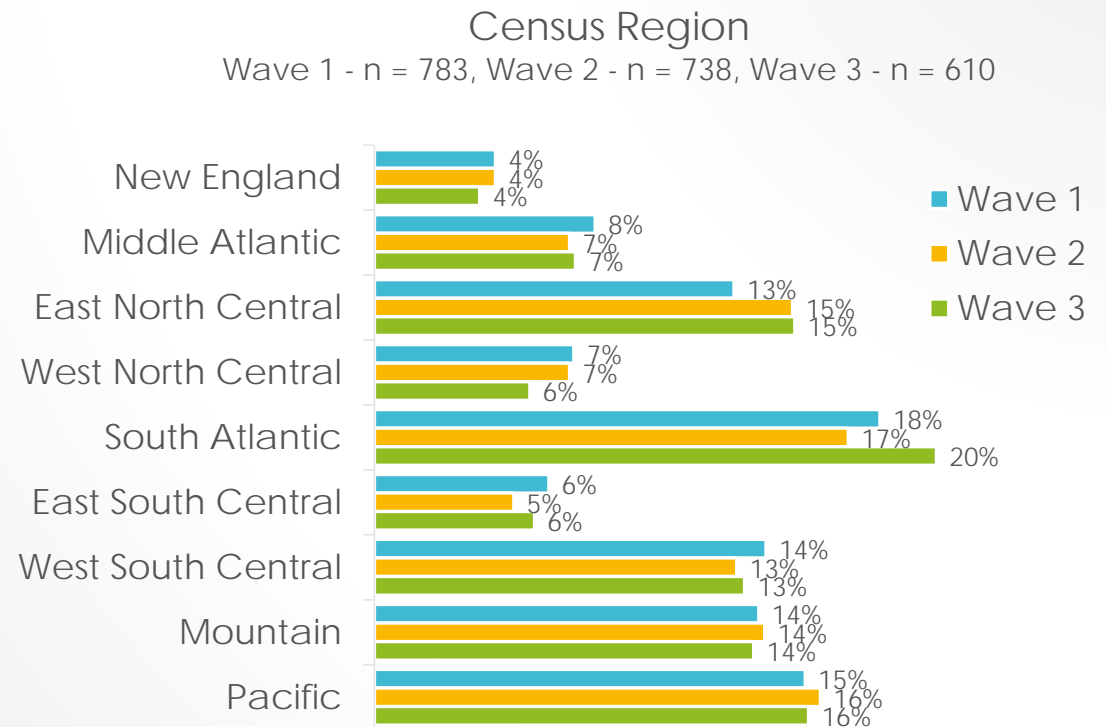
U.S. Department of Commerce Economics and Statistics Administration U.S. Census Bureau (Not) Prepared by the Geography Division

Imitation of [http://www.census.gov/geo/www/us\\_regdiv.pdf](http://www.census.gov/geo/www/us_regdiv.pdf)



## THE GEOGRAPHIC LOCATION OF RESPONDENTS' ORGANIZATIONS ARE STATISTICALLY SIMILAR IN WAVES 1, 2 AND 3.

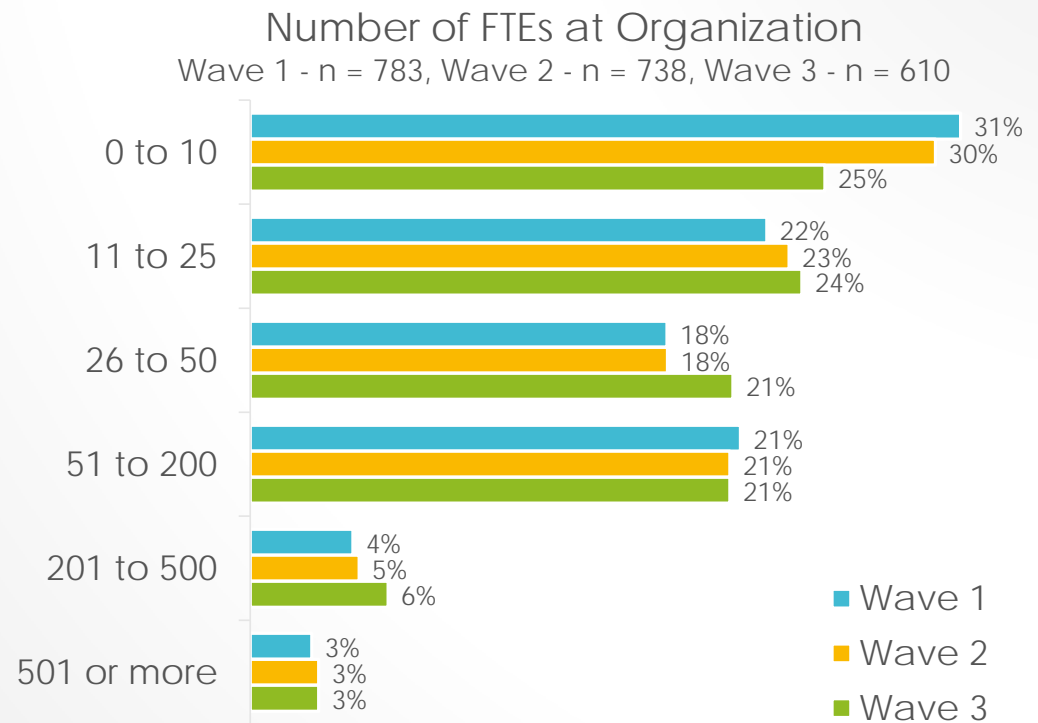
- For an analysis of trends by region, please refer to the report for Wave 1.



Q2. In which state is your organization headquartered?

ALTHOUGH THERE ARE PROPORTIONATELY FEWER FIRMS WITH LESS THAN 11 FTEs (25%) IN WAVE 3 COMPARED TO WAVES 1 AND 2 (31% AND 30%), ROUGHLY HALF OF ALL RESPONDENTS (49% VS. 53%) STILL INDICATE THERE ARE 25 OR FEWER FULL-TIME EQUIVALENTS AT THEIR ORGANIZATION.

- The median number of FTEs in Wave 3 is 26.5 compared to 23 for the previous two waves. The difference between the waves is not large enough to affect the overall results to questions in this report, so comparison between Waves can still be made accurately.
- The largest organization in Wave 1 reported 11,000 FTEs compared to 10,000 in Waves 2 and 3.
- Throughout this report all questions are reported by firm size and statistically significant differences are noted.



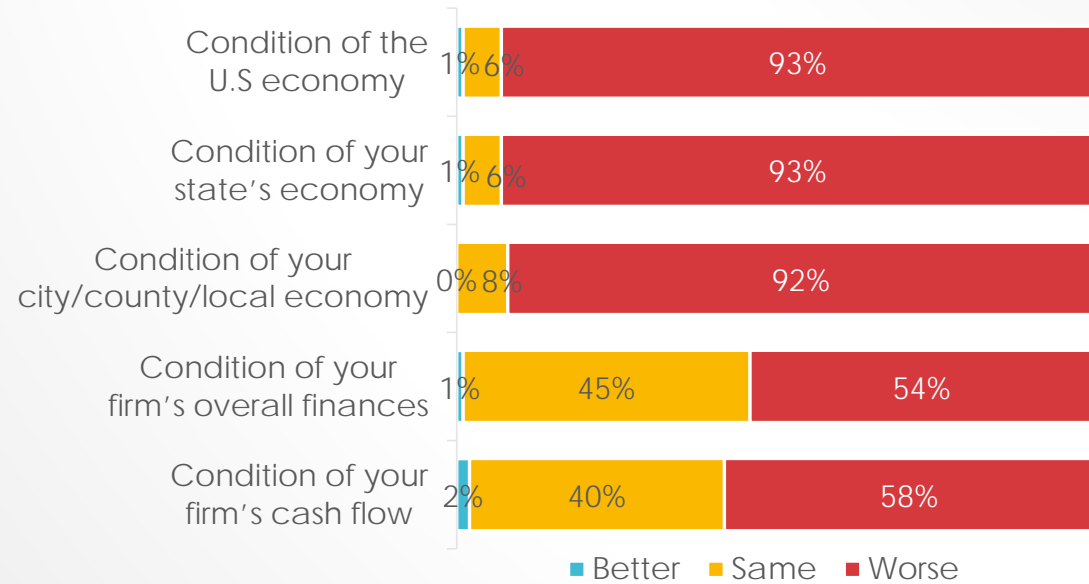
Q3. Including yourself, how many full-time equivalent employees (FTEs) do you have? If you are not sure, please provide your best estimate.

# ECONOMIC SENTIMENT

MORE THAN NINE OUT OF TEN FIRMS FEEL THE ECONOMY AT ALL LEVELS IS WORSE TODAY THAN IT WAS 30 DAYS AGO. IN ADDITION MORE THAN HALF FEEL THEIR FIRM'S FINANCES (54%) AND CASH FLOW (58%) ARE WORSE TODAY.

- There is only one statistically significant difference by firm size:
  - Firms with 25 or fewer FTEs are slightly more likely than other firms to say their cash flow is worse today (64%).

Economic Sentiment  
Today Compared to 30 Days Ago\*  
Wave 3 - n = 592 - 585

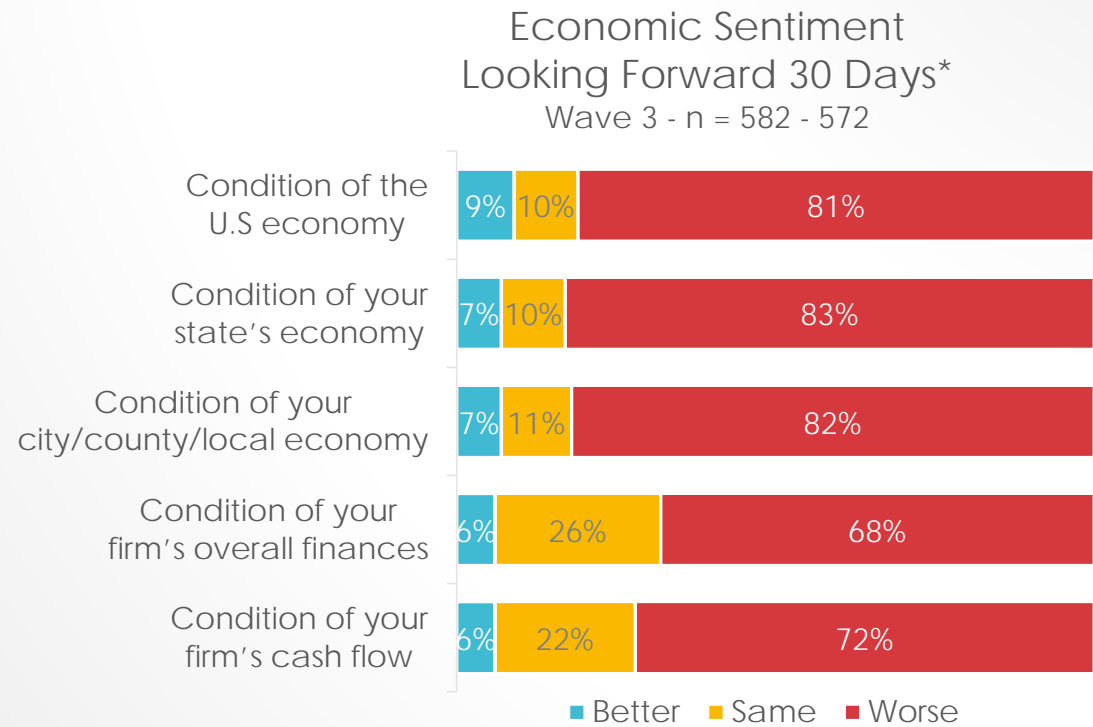


Q12. Compared to 30 days ago, how do you feel about each of the following today?  
\* "Not sure" responses omitted from calculations

\* Not asked in Waves 1 and 2

MORE THAN EIGHT OUT OF TEN FIRMS FEEL THE ECONOMY AT ALL LEVELS WILL BE EVEN WORSE 30 DAYS FROM NOW. IN ADDITION, SENTIMENT ABOUT THE FIRM'S FINANCES (68%) AND CASH FLOW (72%) DETERIORATE EVEN FURTHER COMPARED TO THE ALREADY POOR SENTIMENT TODAY (SEE PREVIOUS SLIDE).

- There are no statistically significant difference by firm size.



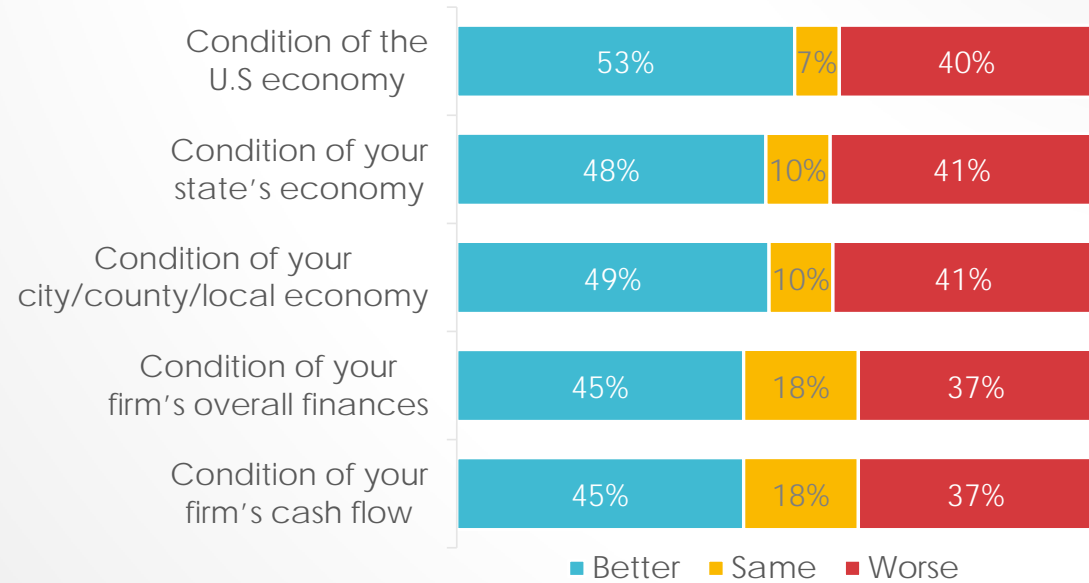
Q14. Looking ahead 30 days, how do you think each of the following will be 30 days from now?  
"Not sure" responses omitted from calculations

\* Not asked in Waves 1 and 2

ALTHOUGH NEARLY HALF OF FIRMS FEEL THE ECONOMY WILL IMPROVE SIX MONTHS FROM NOW, ABOUT ONE OUT OF FOUR THINK IT WILL CONTINUE TO GET WORSE. SENTIMENT ABOUT THE FIRMS' FINANCES AND CASH FLOW FOLLOW THE SAME TREND.

- There are no statistically significant difference by firm size.

Economic Sentiment  
Looking Forward Six Months\*  
Wave 3 - n = 570 - 558



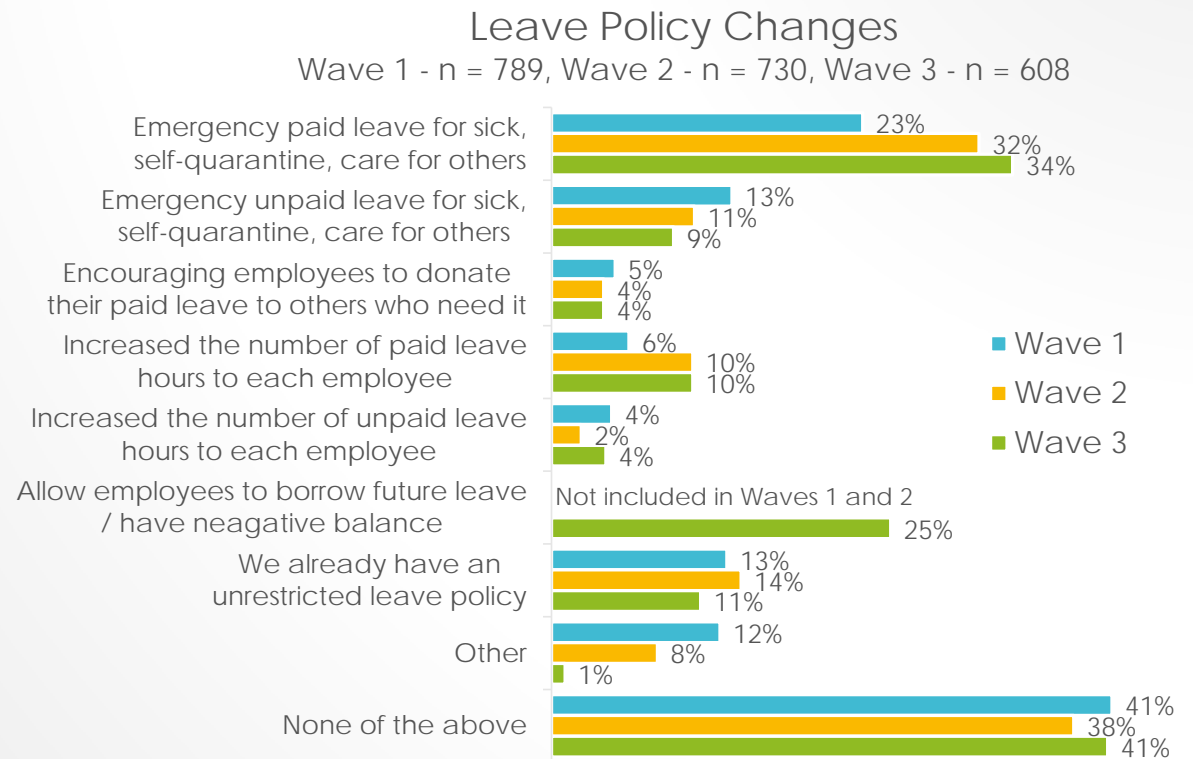
Q16. Looking ahead six months, how do you think each of the following will be six months from now?  
"Not sure" responses omitted from calculations

\* Not asked in Waves 1 and 2

# WORKSTYLE IMPACTS

ALTHOUGH THE PERCENTAGE OF FIRMS THAT HAVE CHANGED THEIR LEAVE POLICY IS STABLE, THE SHIFT TOWARDS PROVIDING EMERGENCY PAID LEAVE INSTEAD OF UNPAID LEAVE CONTINUES TO INCREASE LIKELY DUE TO PASSAGE OF THE STIMULUS PLAN LAST WEEK.

- A new response option was included in Wave 3 as a result of open-ended comments in the previous Waves. As a result, we find **25% of firms are allowing their employees to borrow from future leave or go negative on their leave balance.**



Q4. Which of the following, if any, has your company implemented regarding its leave policy? Select All That Apply



THE LARGER THE FIRM SIZE, THE MORE LIKELY THE FIRM HAS IMPLEMENTED EMERGENCY PAID LEAVE AND/OR IS ALLOWING EMPLOYEES TO BORROW FUTURE LEAVE / GO NEGATIVE ON THEIR LEAVE BALANCE. FIRMS WITH AT LEAST 201 FTES ARE ALSO MORE LIKELY TO HAVE CHANGED ALL OTHER LEAVE POLICIES.

Leave Policy Changes by Firm Size (FTE)

	Total	0 to 25	26 to 50	51 to 200	201 to 500	501 or more
Emergency paid leave for those who become sick, must self-quarantine, or care for others	34%	24%	41%	43%	49%	45%
Emergency unpaid leave for those who become sick, must self-quarantine, or care for others	9%	6%	9%	12%	11%	25%
Encouraging employees to donate their paid leave to others who need it	4%	1%	3%	5%	17%	15%
Increased the number of paid leave hours to each employee	10%	6%	13%	13%	17%	20%
Increased the number of unpaid leave hours to each employee	4%	1%	5%	3%	9%	20%
Allow employees to borrow from future leave / go negative on their leave balance	25%	15%	31%	29%	40%	75%
We already have an unrestricted leave policy	11%	16%	6%	8%	0%	10%
Other	1%	0%	1%	0%	3%	5%
None of the above	41%	51%	32%	35%	23%	10%

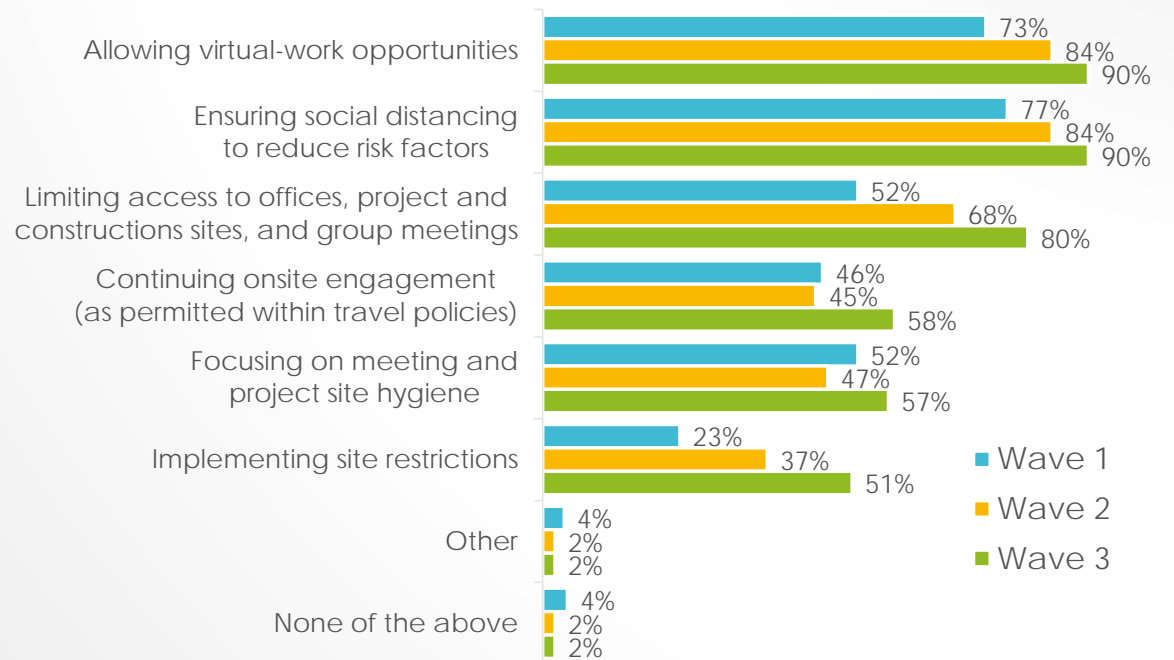
Q4. Which of the following, if any, has your company implemented regarding its leave policy? Select All That Apply

Indicates significantly <u>higher</u> percentage
Indicates significantly <u>lower</u> percentage

COMPARED TO WAVE 2, MORE FIRMS HAVE IMPLEMENTED EACH METHOD OF WORKING WITH CLIENTS TO ENSURE WORK CONTINUATION. ALLOWING VIRTUAL WORK AND SOCIAL DISTANCING (BOTH 90% UP FROM 84%) STILL TOP THE LIST.

- Other methods saw big increases from Wave 2 to Wave 3 likely due to the continuing spread of the virus.

Methods of Working With Clients to Ensure Work Continuation  
Wave 1 - n = 791, Wave 2 - n = 727, Wave 3 - n = 605



Q5. In which of the following ways, if any, are you working with your client counterparts to ensure projects can be executed and work can continue?  
Select All That Apply

GENERALLY SPEAKING, THE LARGER THE FIRM SIZE, THE MORE LIKELY THE FIRM HAS IMPLEMENTED ALL METHODS.

Methods of Working With Clients to Ensure Work Continuation by Firm Size (FTE)

	Total	0 to 25	26 to 50	51 to 200	201 to 500	501 or more
Allowing virtual-work opportunities	90%	85%	91%	95%	97%	100%
Ensuring social distancing to reduce risk factors	90%	83%	95%	96%	97%	100%
Limiting access to offices, project and construction sites, and group meetings	80%	71%	88%	85%	91%	100%
Continuing onsite engagement	58%	48%	63%	66%	86%	85%
Focusing on meeting and project site hygiene	57%	45%	60%	68%	89%	80%
Implementing site restrictions	51%	39%	59%	63%	60%	75%
Other	0%	1%	0%	1%	0%	0%
None of the above	1%	2%	0%	1%	0%	0%

**Indicates significantly higher percentage**

**Indicates significantly lower percentage**

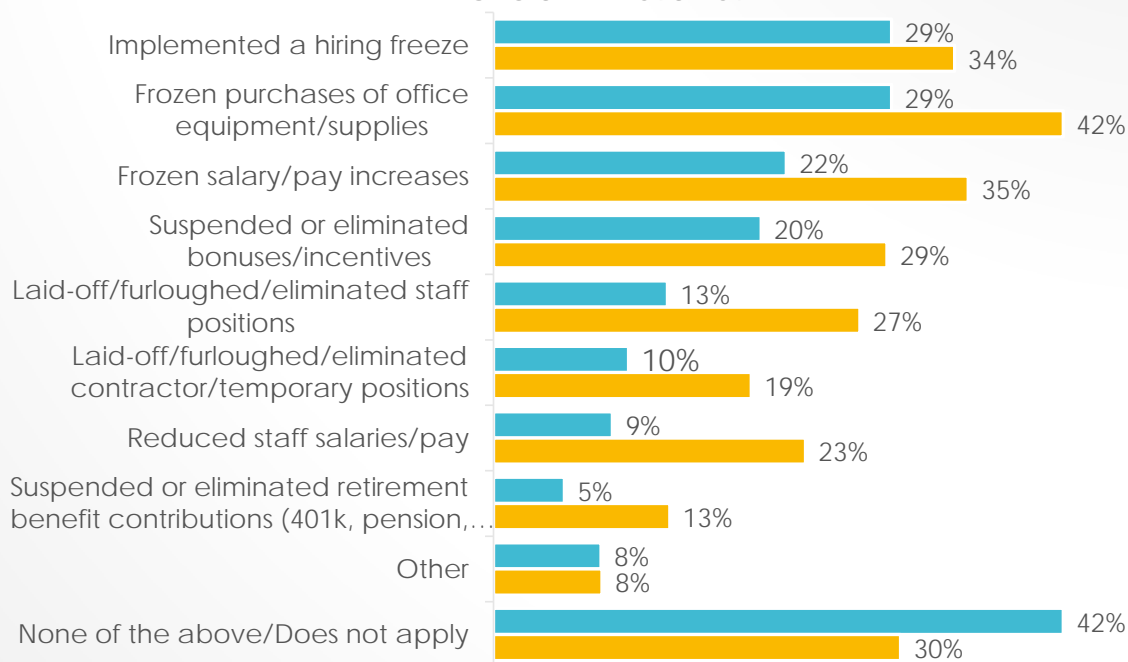
Q5. In which of the following ways, if any, are you working with your client counterparts to ensure projects can be executed and work can continue? Select All That Apply

# BUSINESS IMPACTS

WHILE MANY FIRMS HAVE ALREADY TAKEN ACTIONS IN THE PAST 30 DAYS TO SHORE UP THEIR FINANCES, EVEN MORE EXPECT TO DO SO IN THE COMING 30 DAYS. PRINCIPAL AMONG THESE ARE IMPLEMENTING HIRING FREEZES (29% HAVE DONE AND 34% EXPECT TO) AND FREEZING NON-ESSENTIAL PURCHASES (29% AND 42%).

- Respondents also mentioned in the “other” comments they plan to reduce work hours of employees as a way to cut back on payroll expenses.

Actions Taken / Plan to Take to Shore up Finances\*  
Wave 3 - n = 593 - 592



\* Not asked in Waves 1 and 2

© 2020 ACEC RESEARCH INSTITUTE. ALL RIGHTS RESERVED.

Q13. Which of the following actions, if any, has your firm taken in the past 30 days? Select All That Apply  
Q15. Which of the following actions, if any, is it likely your firm will take in the next 30 days? Select All That Apply

GENERALLY SPEAKING, THE LARGER FIRMS ARE MORE LIKELY TO HAVE TAKEN VARIOUS ACTIONS COMPARED TO SMALLER FIRMS.

Actions Taken in Past 30 Days to Shore up Finances by Firm Size\*

	Total	0 to 10	26 to 50	51 to 200	201 to 500	501 or more
Implemented a hiring freeze	29%	24%	32%	33%	57%	20%
Frozen purchases of office equipment/supplies	29%	27%	23%	29%	57%	50%
Frozen salary/pay increases	22%	19%	22%	22%	43%	20%
Suspended or eliminated bonuses/incentives	20%	17%	19%	20%	37%	25%
Laid-off/furloughed/eliminated staff positions	13%	8%	10%	20%	29%	35%
Laid-off/furloughed/eliminated contractor/temporary positions	10%	4%	10%	15%	23%	30%
Reduced staff salaries/pay	9%	8%	8%	10%	14%	15%
Suspended or eliminated retirement benefit contributions	5%	2%	6%	11%	11%	5%
Other	8%	4%	10%	11%	11%	25%
None of the above	41%	53%	37%	34%	17%	30%

**Indicates significantly higher percentage**

**Indicates significantly lower percentage**

Q13. Which of the following actions, if any, has your firm taken in the past 30 days? Select All That Apply

\* Not asked in Waves 1 and 2

NOT ONLY ARE ALL SIZED FIRMS MORE LIKELY TO TAKE VARIOUS ACTIONS IN THE COMING 30 DAYS, BUT LARGER FIRMS ARE GENERALLY MORE LIKELY TO TAKE ACTIONS THAN SMALLER FIRMS.

Actions Planned in Next 30 Days to Shore up Finances by Firm Size\*

	Total	0 to 10	26 to 50	51 to 200	201 to 500	501 or more
Freeze purchases of office equipment/supplies	42%	35%	49%	50%	51%	40%
Freeze salary/pay increases	35%	30%	32%	39%	63%	35%
Implement a hiring freeze	34%	27%	41%	41%	54%	20%
Suspend or eliminate bonuses/incentives	29%	27%	31%	28%	37%	25%
Lay-off/furlough/eliminate staff positions	27%	17%	25%	34%	57%	70%
Reduce staff salaries/pay	23%	22%	23%	24%	34%	10%
Lay-off/furlough/eliminate contractor/temporary positions	19%	11%	13%	33%	43%	50%
Suspend or eliminate retirement benefit contributions	13%	12%	12%	16%	17%	20%
Other	8%	9%	5%	7%	9%	15%
None of the above	30%	39%	25%	21%	11%	20%

**Indicates significantly higher percentage**

**Indicates significantly lower percentage**

Q15. Which of the following actions, if any, is it likely your firm will take in the next 30 days? Select All That Apply

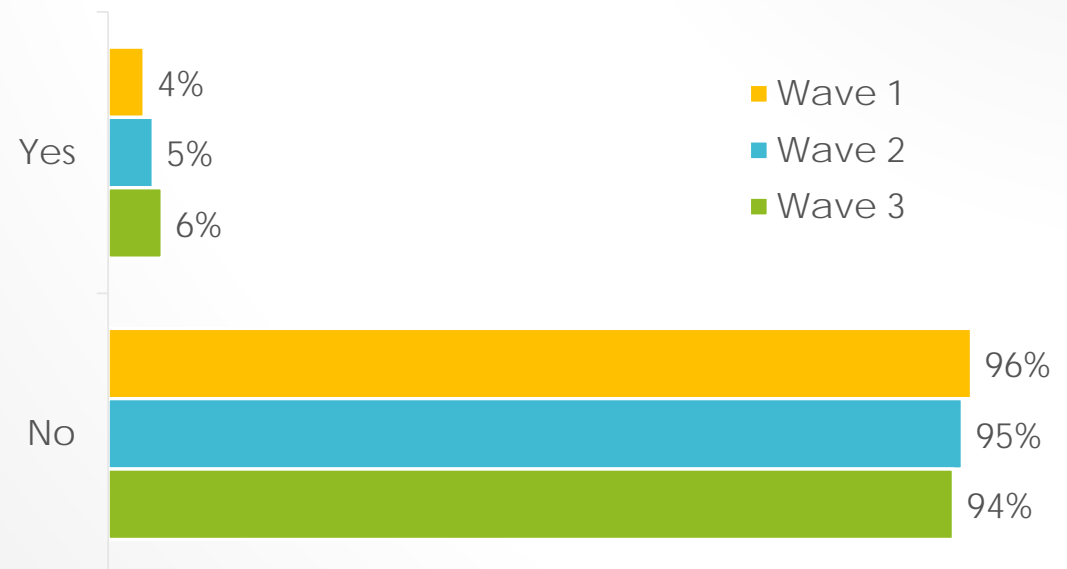
\* Not asked in Waves 1 and 2

## SIMILAR TO WAVE 1 AND 2, VERY FEW ORGANIZATIONS (6%) REPORT PROBLEMS WITH PUBLIC CLIENTS DUE TO PROTECTIVE MEASURES CONFLICTING WITH CONTRACT TERMS.

- Although percentages vary by firm size, the differences are not statistically significant:
  - 0 to 25 FTEs = 4% "Yes"
  - 26 to 50 FTEs = 7%
  - 51 to 200 FTEs = 9%
  - 201 to 500 FTEs = 9%
  - 501 or more FTEs = 0%

### Problems With Public Clients Due to Protective Measures Conflicting with Contract Terms

Wave 1 - n = 791, Wave 2 - n = 726, Wave 3 - n = 602



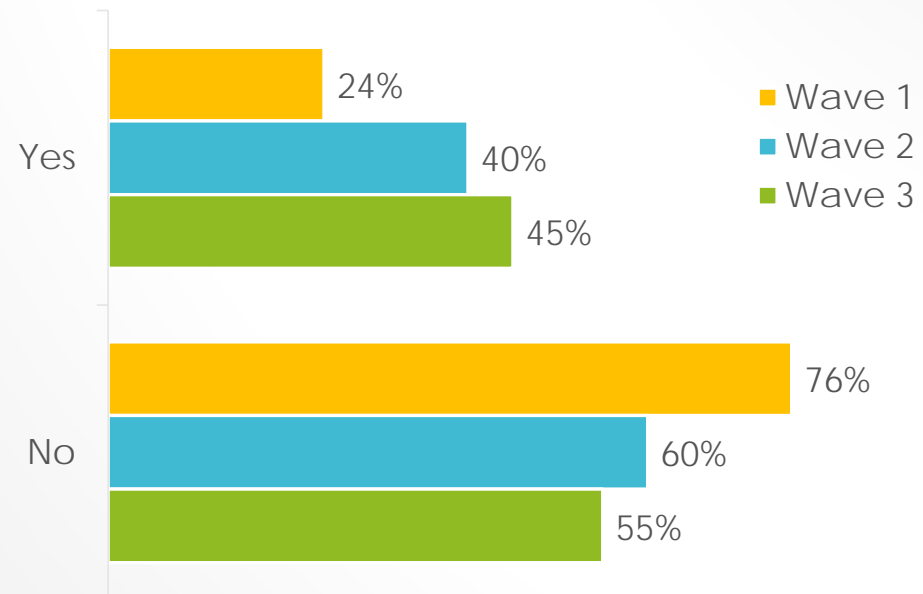
Q6. Has your company experienced problems with public clients when protective measures may conflict with contract terms?



CONSISTENT WITH WAVE 1 AND 2, THERE CONTINUES TO BE AN INCREASE IN THE PERCENTAGE OF FIRMS (45% UP FROM 40% IN WAVE 2 AND 24% IN WAVE 1) REPORTING DELAYS IN RFPS/RFQS OR AWARDS DUE TO COVID-19.

- As firm size increases, so too does the percentage of firms reporting delays, up to 51 or more FTEs where it levels off:
  - 0 to 25 FTEs = 36% "Yes"
  - 26 to 50 FTEs = 49%
  - 51 to 200 FTEs = 58%
  - 201 to 500 FTEs = 50%
  - 501 or more FTEs = 55%

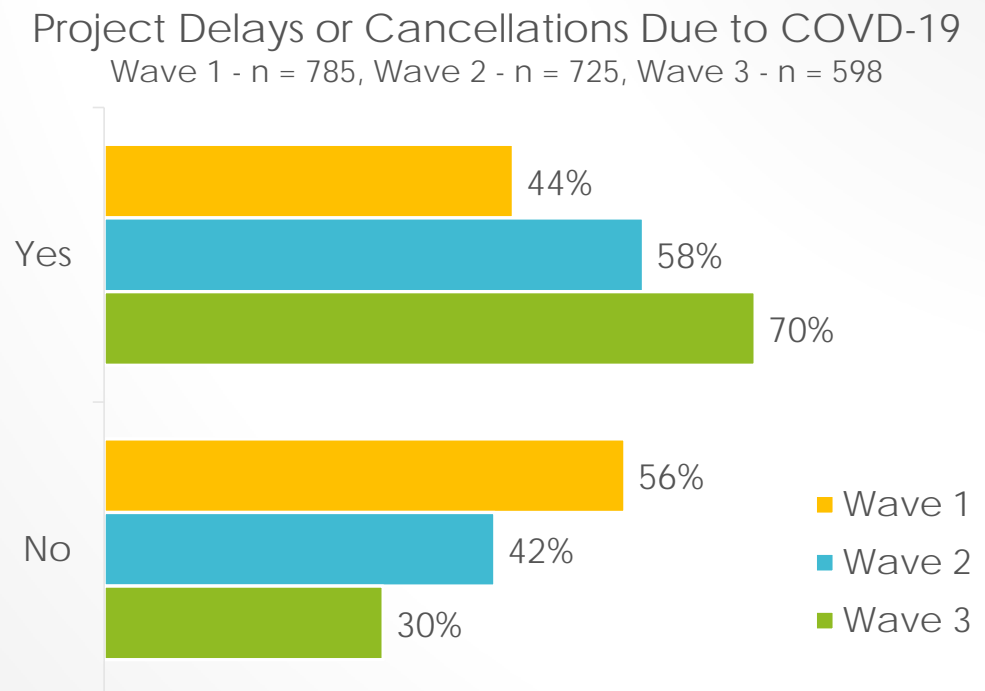
Delays in RFPs/RFQs or Awards Due to COVID-19  
Wave 1 - n = 787, Wave 2 - n = 720, Wave 3 - n = 593



Q8. Is your firm experiencing delays in the issuance of RFPs/RFQs or awards as a result of COVID-19?

CONSISTENT WITH WAVE 1 AND 2, THERE CONTINUES TO BE AN INCREASE IN THE PERCENTAGE OF FIRMS (70% UP FROM 58% IN WAVE 2 AND 44% IN WAVE 1) REPORTING PROJECT DELAYS OR CANCELLATIONS DUE TO COVID-19.

- As firm size increases, so too does the percentage of firms reporting delays/cancellations:
  - 0 to 25 FTEs = 63% "Yes"
  - 26 to 50 FTEs = 74%
  - 51 to 200 FTEs = 75%
  - 201 to 500 FTEs = 88%
  - 501 or more FTEs = 85%



Q7. Is your firm experiencing project delays or cancellations as a result of COVID-19?

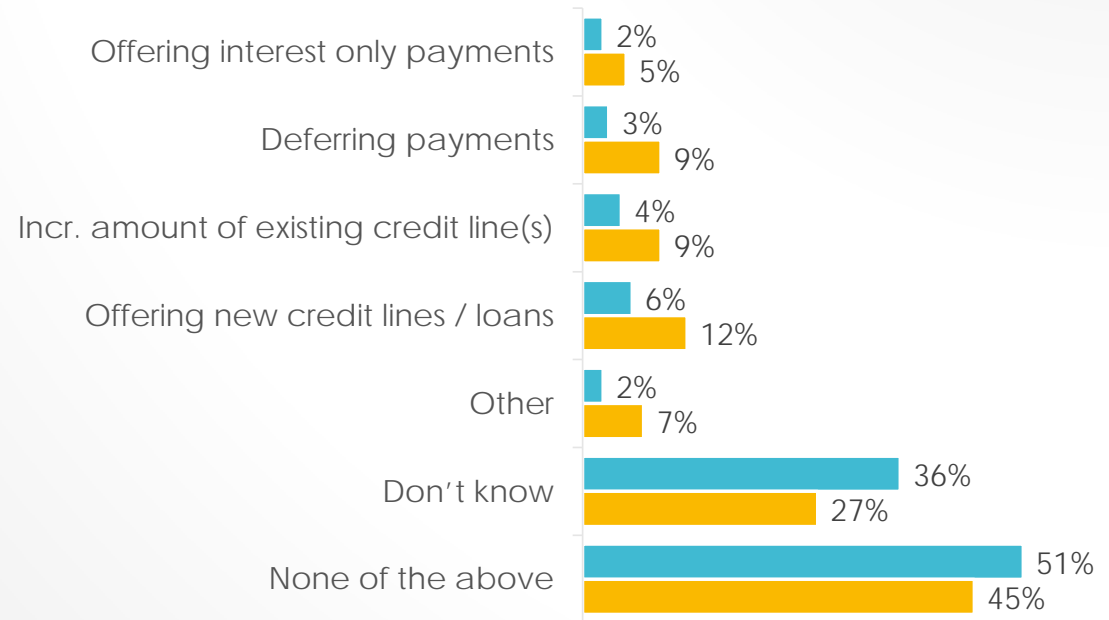
# CREDITOR ASSISTANCE

COMPARED TO WAVE 2, MORE FIRMS ARE REPORTING ASSISTANCE FROM THEIR CREDITORS IN ALL AREAS. NONETHELESS, A MAJORITY OF FIRMS STILL REPORT THEY HAVE NOT RECEIVED OR DON'T NEED ASSISTANCE (72% DOWN FROM 87%).

- In the "other" comments, many firms report they are receiving assistance from their banks in preparation for applying for the Small Business Administration loans and Paycheck Protection Program provided by the Federal stimulus bill passed last week.

### Creditor Assistance Managing Financial Challenges\*

Wave 2 - n = 721, Wave 3 - n = 597



Q9. Which of the following, if any, are your creditors doing to assist your organization with managing the financial challenges related to COVID-19?  
Select All That Apply

\* Not asked in Wave 1

FIRMS WITH 201+ FTES ARE MORE LIKELY TO REPORT RECEIVING ASSISTANCE OF ANY KIND. IN PARTICULAR FIRMS WITH BETWEEN 201 AND 500 FTES ARE MUCH MORE LIKELY TO REPORT RECEIVING ASSISTANCE REGARDING INCREASING AMOUNTS OF EXISTING CREDIT LINES AND OFFERS OF NEW CREDIT LINES.

Creditor Assistance Managing Financial Challenges by Firm Size (FTE)

	Total	0 to 25	26 to 50	51 to 200	201 to 500	501 or more
Offering interest only payments	5%	2%	8%	8%	6%	20%
Deferring payments	9%	8%	10%	10%	14%	10%
Increasing the amount of your existing credit line(s)	9%	3%	5%	13%	46%	25%
Offering new credit lines / loans	12%	10%	12%	17%	17%	20%
Other	7%	3%	9%	12%	9%	5%
Don't know	27%	31%	29%	21%	23%	10%
None of the above	45%	50%	41%	44%	29%	40%

Indicates significantly higher percentage

Indicates significantly lower percentage

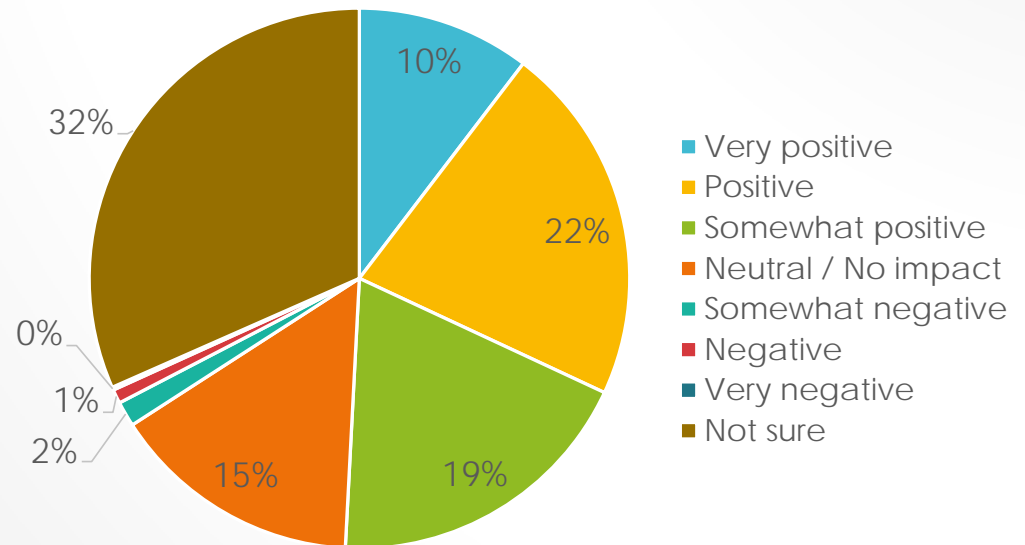
Q9. Which of the following, if any, are your creditors doing to assist your organization with managing the financial challenges related to COVID-19?  
Select All That Apply

# IMPACT OF FEDERAL STIMULUS PLAN

WHILE JUST MORE THAN HALF OF FIRMS (51%) INDICATE THE FEDERAL STIMULUS PACKAGE PASSED LAST WEEK WILL HAVE A POSITIVE IMPACT ON THEIR FIRM, NEARLY ONE-THIRD (32%) ARE NOT SURE YET. ONLY 3% FEEL IT WILL HAVE A NEGATIVE IMPACT.

- Details of differences by firm size are found on the following slide.

Impact of Federal Stimulus Package on Firm\*  
Wave 3 - n = 598



\* Not asked in Waves 1 and 2

Q10. How will the U.S. Government's stimulus package passed last week affect your firm, if at all? Will the impact be...?

AS FIRM SIZE INCREASES, SO TOO DOES THE PERCENTAGE FEELING THE STIMULUS PACKAGE WILL HAVE A POSITIVE IMPACT, WITH THE EXCEPTION OF FIRMS WITH 501+ FTES. THEY ARE MORE LIKELY TO FEEL NO IMPACT.

- Firms with more than 500 FTEs are *less likely* to say the stimulus package will have a positive impact (40%) and *more likely* to say it will have no impact (45%), probably due to the focus of the package being on small businesses.
- Smaller firms, especially those with 25 or fewer FTEs, are *more likely* to say they are not sure of the impact, likely due to their needing assistance understanding the details of the package.

Impact of Federal Stimulus Package on Firm\*  
By Firm Size  
Wave 3 - n = 598



\* Not asked in Waves 1 and 2

Q10. How will the U.S. Government's stimulus package passed last week affect your firm, if at all? Will the impact be...?



## REASONS GIVEN FOR FEDERAL STIMULUS PACKAGE HAVING A POSITIVE IMPACT

- Being able to use the SBA loan forgiveness program to cover payroll, rent, utilities, etc.
- Helps keep the firm from laying off anyone
- Increase in unemployment payments to those who have been laid-off
- Direct stimulus payments to workers
- Relaxed 401k rules
- Investment in infrastructure
- we will have a larger burden in Emergency Paid Sick Leave and Emergency FMLA.

## REASONS GIVEN FOR FEDERAL STIMULUS PACKAGE HAVING A NEGATIVE IMPACT

- The FMLA rules extending to firms with less than 50 employees will be difficult to manage and this is cash off the bottom line.
- Concern about some workers (<\$50,000/yr or so) accepting furlough/layoff if they will make more money by being off work.
- It will lead to higher taxes.
- Although it helps smaller firms, it will not help larger firms.

# APPENDIX

© 2020 ACEC RESEARCH INSTITUTE. ALL RIGHTS RESERVED.

# TESTS OF SIGNIFICANCE FOR MEANS

## **F-test**

When the mean is displayed for a row variable, MarketSight first runs an Analysis of Variance (ANOVA) using an F-test. Doing so tests the hypothesis that the means of multiple normally distributed populations, all having the same variance, are equal.

MarketSight tests whether or not the row variable's means are equal to one another for all columns in the crosstab. Rejecting the test hypothesis implies that at least one of the column means is significantly different from the others.

## **Fisher's Least Significant Difference (LSD) test**

If the statistics option to "Correct for Type I errors in all comparisons" is disabled, MarketSight will run Fisher's LSD test for both Pairwise tests and Contrast tests of means. MarketSight only runs Fisher's LSD test if the ANOVA F-test first rejects the null hypothesis that all column means are equal to one another.

Fisher's LSD test is a relatively powerful test because it uses the pooled variance estimate from the F-test, thus taking advantage of the increased sample size of all columns in the crosstab. Pooling the variance is valid because MarketSight explicitly tests for equality of variance among all columns prior to running the associated F-test.

Although the test is more powerful than either the Tukey HSD or Scheffé tests, it is more susceptible to Type I error when running multiple simultaneous tests.

# TESTS OF SIGNIFICANCE FOR MEANS (CONT)

## **Scheffé test**

If the statistics option to "Correct for Type I errors in all comparisons" is enabled, MarketSight will run the Scheffé test for Contrast tests of means. MarketSight only runs the Scheffé test if the ANOVA F-test first rejects the null hypothesis that all column means are equal to one another.

The Scheffé test is a conservative test for running multiple Contrast tests of Means which controls the overall Type I error rate for all possible contrasts based on the selected Confidence Level.

## **Tukey-Kramer tests**

MarketSight will run Tukey-Kramer test for Pairwise tests of means. MarketSight only runs Tukey-Kramer test if the ANOVA F-test first rejects the null hypothesis that all column means are equal to one another.

Tukey-Kramer test is a conservative test for running multiple Pairwise comparisons of Means. It controls the overall Type I error rate across a number of related Pairwise tests based on the selected Confidence Level.

# TESTS OF SIGNIFICANCE FOR PROPORTIONS

## **Chi-squared**

When a Row Variable displays the Column % or Count option for individual Values, MarketSight runs a Chi-squared test. This test examines whether there is a relationship between the Column Variable(s) and the Row Variable.

Chi-squared tests involve a comparison of "actual" cell counts to "expected" cell counts in a crosstab.

The expected count for each cell is derived from a Row Variable's actual counts as follows: multiply the cell's row total by its column total, then divide by the sum total of all observations.

If the actual cell counts for one or more cells differ materially from their expected counts, the Chi-squared test may produce a statistically significant result which implies there is a relationship between the Column Variable(s) and the Row Variable.

A modified version of a Chi-Squared test is run for Multiple Response Variables.

# TESTS OF SIGNIFICANCE FOR PROPORTIONS (CONT)

## **Fisher's Exact**

For 2x2 crosstabs with small sample sizes, the Chi-squared test may be unreliable. Therefore, MarketSight runs an alternate test, Fisher's Exact Test, if more than 20% of the cells in a 2x2 crosstab have an expected cell count less than 5, or if any cells in a 2x2 cross-tab have an expected cell count less than 1.

Fisher's Exact Test calculates the true probability of observing a particular set of actual cell counts in a 2 x 2 crosstab, assuming that row and column totals are held constant.

Fisher's Exact Test is not run for Multiple Response Variables.

## **z-test**

MarketSight runs Z-tests for both Contrast and Pairwise tests of Column Proportions. A Z-test is used to test for a difference between two column proportions. The column proportions involved in the test are the cell counts divided by their respective column totals.

A Z-test is only run when the cells being compared have actual counts greater or equal to 5 and the column sample size minus the actual cell counts is greater than or equal to 5. If these data sufficiency conditions are not met, MarketSight runs Fisher's Exact Test instead.

A modified version of a Z-test is run for Multiple Response Variables.

# THANK YOU!



**Research conducted by Joseph Bates**

Research Consultant  
ACEC Research Institute  
Institute@acec.org

